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PHOTOGRAPHS AND DESCRIPTIONS OF CUP-FUNGI—VIII. ELVELA INFULA AND GYROMITRA ESCULENTA

FRED J. SEAVER

(WITH PLATE 1)

There seems to be considerable confusion and diversity of opinion among students of Ascomycetes as to what constitute the real differences between[1] *Elvela infula* Schaeff. and *Gyromitra esculenta* (Pers.) Fries.

Schaeffer published two plates (159 and 160) in his illustrations of fungi which, although they received no specific names in the text, were labeled in the index *Elvela infula* and *Elvela Mitra* respectively, the latter being distinguished from the former by its more rugose hymenium. In 1800, Persoon, in his "Commentarius," retained the name *Elvela infula* in the same sense as used by Schaeffer, but *Elvela Mitra* was changed to *E. esculenta* since *E. Mitra* had been previously used by Linnaeus for an entirely different species.

In 1849 Fries established the genus *Gyromitra* on *Elvela esculenta,* this genus being distinguished from *Elvela* by the fact that the hymenium is gyrose with elevated ridges, essentially the same character used by Schaeffer in separating the species.

Rehm retained the genus *Gyromitra* for *Elvela esculenta* but also included *Elvela infula* in the genus, as had been previously done by Quélet, citing both plates (pp.) under each species, which would indicate, according to Rehm, that Schaeffer had mixed the

[1] The generic name has been variously spelled, *Elvela, Elvella,* and *Helvella.* In the present paper the original spelling is adopted.

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two species on both plates. If Rehm is correct in placing the two species in the same genus, there is no longer any reason for considering them specifically distinct since Fries used the same character in segregating the genus as had previously been used by Schaeffer in separating the species. *Gyromitra* can not then be regarded as a valid genus, since it was founded on a supposed difference which has been found to no longer exist.

Boudier retains the genus *Gyromitra,* but bases it on an entirely different character so as to exclude from the genus the very species on which it was founded. A new genus *Physomitra* is then proposed which includes the two species which he calls *Physomitra infula* and *Physomitra esculenta.* In his description of the last two species, there is a slight difference in the size of the spores, a difference, however, which had not been noted by previous authors.

While, to be sure, other differences have been pointed out by more recent authors in addition to those originally mentioned by Schaeffer and Fries, such as the shape of the pileus, the color, the attachment of the pileus to the stem, the inflation of the cap, etc., none of these characters appear to the writer to be any more fixed and reliable than the one originally mentioned. The type of the genus *Elvela* has the pileus more or less adnate to the stem, so that this character cannot be used as a distinguishing character between *Elvela* and *Gyromitra.* Even the original illustration of the type of the genus *Gyromitra* does not show the pileus completely attached to the stem at the margin, as might be inferred from many modern illustrations and descriptions. The inflation of the cap is a character which is common to both *Elvela infula* and *Gyromitra esculenta* and one which is most variable and misleading.

The difference in the rugosity or gyrosity of the hymenium might be accepted as a good specific and possibly generic character were it not for the fact that we often find all stages of gyrosity in specimens growing apparently from the same mycelium, and which we have no reason to believe do not represent the same species. It seems to the writer that it was a mistake to establish a genus on a character which is of very doubtful specific

value as was done in the case of *Gyromitra.* This is shown by the fact that no two modern writers seem to agree as to just what constitutes the difference between *Gyromitra esculenta* and *Elvela infula.*

In "Minnesota Helvellineae," Miss Hone lists *Elvela infula* but makes no mention of *Gyromitra esculenta.* She then appends an extended note explaining why she considers the Minnesota plant an *Elvela* instead of a *Gyromitra,* laying great stress on the absence of what she considers a true inflation of the cap, a character which has been ascribed to *Gyromitra* by Schroeter. Just what Schroeter would consider a true inflation of the cap is a question which mycologists seem unable to answer.

In the "Discomycetes of Wisconsin," Dodge lists *Elvela infula* but does not include *Gyromitra esculenta.* He apparently found no specimen in Wisconsin which would satisfy the requirements of *Gyromitra esculenta* as defined by modern authors.

The writer, in "Iowa Discomycetes," listed *Gyromitra esculenta,* but at that time knew nothing of *Elvela infula.* Yet the illustrations of the Minnesota and Iowa plants which have been placed in different genera might easily pass for the same species.

After a comparison of the above lists, the writer is convinced that the three authors are writing about the same plant but calling it by different names. Otherwise, why is it that the two species have never been reported from either of the three adjacent states which have such a close similarity in climate and natural conditions?

And European reports are equally puzzling. Rehm in his "Discomycetes of Europe" lists both *Gyromitra esculenta* and *G. infula,* but all of the exsiccati mentioned are included under the first. If the two forms are really distinct and both are represented in Europe, it seems strange that Rehm was unable to find any published exsiccati to illustrate the latter species.

After a careful examination of all the available facts, the writer is forced to conclude that *Gyromitra* is what some writers might call a traditional genus, having come down through literature and having been commonly accepted by mycologists but originally founded on a plant which cannot be specifically separated

from *Elvela infula*. The extreme variability of the species would readily account for all the different interpretations which have been assigned to the two supposed species by different mycologists. I therefore venture to combine the species and append a complete synonymy and description.

ELVELA INFULA Schaeff. Fung. Bavar. 4: Ind. 105. 1774.

?*Phallus Monacella* Scop. Fl. Carn. ed. 2, 2: 476. 1772.
Elvela Mitra Schaeff. Fung. Bavar. 4: Ind. 105. 1774. Not *E. Mitra* L.
Elvela brunnea L. Syst. Nat. 1450. 1796.
Helvella esculenta Pers. Comm. Fung. Bavar. 64. 1800.
Elvela infula Pers. Syn. Fung. 617. 1801.
Gyromitra esculenta Fries, Summa Veg. Scand. 346. 1849.
Elvela rhodopus Krombh. Abbild. 3: 23, 1834.
Gyromitra infula Quél. Ench. Fung. 272. 1886.
Gyromitra esculenta crispa Peck, Ann. Rep. N. Y. State Mus. **51**: 299. 1898.
Physomitra infula Boud. Hist. Class. Discom. Eu. 35. 1907.
Physomitra esculenta Boud. Hist. Class. Discom. Eu. 35. 1907.

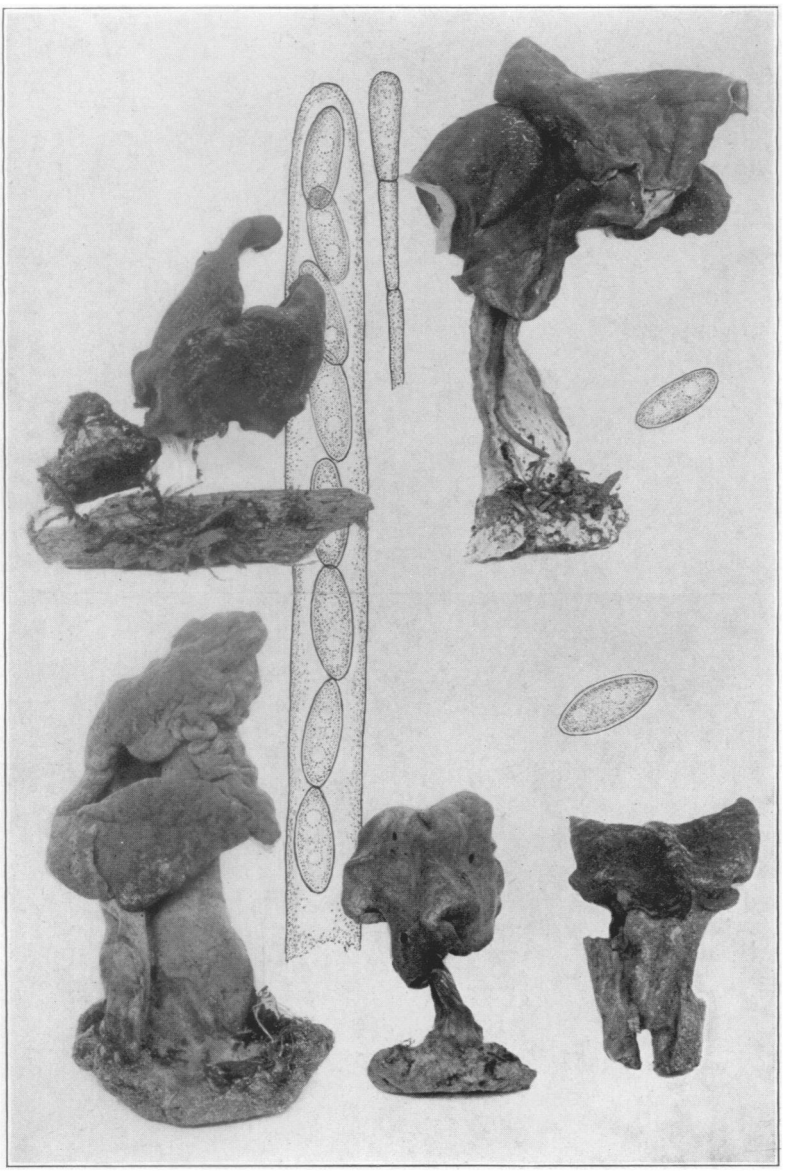
Pileus reaching a diameter of 6–8 cm., reflexed and more or less adnate to the stem, very irregular, mitrate, saddle-shaped or occasionally subglobose, even or variously contorted or convoluted, the color varying from reddish-brown to dark-brown and occasionally almost black; stem reaching a length of 6–8 cm. and a diameter of 5–15 mm.; even or more or less lacunose, never strongly fluted, the color varying from whitish to yellowish or occasionally with a pinkish tint; asci cylindric or subcylindric, reaching a length of 200 μ and a diameter of 12–14 μ, 8-spored; spores 1-seriate or partially 2-seriate, rather narrow-ellipsoid, containing two oil-drops, about 8–12 $\times$ 18–24 μ; paraphyses strongly enlarged at their apices, reaching a diameter of 10 μ.

On the ground or occasionally on rotton wood.

TYPE LOCALITY: *Europe*.

DISTRIBUTION: Maine to British Columbia and California.

ILLUSTRATIONS: Schaeff. Fung. Bavar. 4: *pl. 159, 161;* Rab. Krypt.-Fl. 1^3: 1174; *f. 1–3;* Boud. Ic. Myc. *pl. 223, 224;* Pers. Champ. Comest. *pl. 4;* Cooke, Hand. Brit. Fungi 2: 657, *f. 322;*



ELVELA INFULA SCHAEFF.

Cooke, Mycographia *pl. 89, f. 328* and *pl. 90, f. 330;* Gill. Champ. Fr. Discom., *pl. 19;* Massee, Brit. Fungus. Fl. **4**: 188, *f. 14;* Phill. Brit. Discom. *pl. 1, f. 2;* E. & P. Nat. Pfl. **1**[1]: 44, *f. 141B;* Fries, Sv. Aetl. Svamp. *pl. 82 and 83;* Krombh. Abbild. *pl. 20, f. 6–12* and *pl. 21, f. 12–17;* Minn. Bot. Studies **3**: *pl. 3, f. 1–3.*

EXSICCATI: N. Am. Fungi 1267; Clements. Crypt. Form. Colo. *141.*

NEW YORK BOTANICAL GARDEN.

EXPLANATION OF PLATE 1

Several plants photographed from dried specimens and about one-half natural size. The spores, ascus, and paraphysis were drawn with the aid of the camera lucida with a one-inch eye-piece and a one-sixth objective. The lower figure is the type of *E. oregonensis.*